UPPER TRISHULI-1 HEP (216MW)			
Client	Doosan Heavy Industries & Construction		
DHI's Subcontractor	Power Construction Corporation of China		
REPLY COMMENT			
Subcontractor	Power Construction Corporation of China		
Incoming Document			
Title of the Document	**Outline Drawing of Inlet Structure of Diversion Tunnel**		
Document/Drawing No.	UT1-C-010-CVL-DG-43008 (4 sheets)	Revision	0B
Review Document No.	**UT1-HEP-DHI-PC-D-0016**	Reviewed Note No.	**RN-0094**
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Outgoing Document			
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Reply No.	RC-00xx	Reply date	**31.03.2022**

General comments regarding annotation of Elevations, Dimensions, Legend, Line types, Hatch types, Center lines, Drawings' name and No., and so on are responded and drawings are revised, please refer to Rev.B.

OE: Not all general comments have been responded and revised as per RN-0060 (Max. flood level, detail of

sill beam, definition of rubble concrete, reinforcement drawings as ref. dg.

Reply: The max. flood level, reinforcement drawings ref. have been added.

The commented "sill beam", is one 2nd stage concrete groove, detail of this sill please refer to drawing.

The rubble concrete has been deleted as per actual inlet excavation.

Some critical issues are replied as follows:

Issue 1: Location of construction joint and water stop

Reply: At the chainage D0+000.00, there is no joint be designed. The inlet/gate slot part is designed as one integral structure with the behind 6m long open and buried "tunnel" by considering the actual overbreak of the inlet portal to maintain general stability of inlet.one expansion joint is set/designed at chainage D0+006.00. please refer to 3D model of inlet structure sketch.

OE: Not further comments.

Reply: Noted.

Issue 2: The level of top platform

Reply:

(1) Determination of level of inlet top platform

the level of inlet top platform is taken as 1250.5m, equals to 1244.5m(bottom slab) +5m(height of tunnel)+1m(freeboard)=1250.5m).

(2) analysis on water level when stoplogs closing

According to the construction progress, diversion tunnel plugging is arranged in March, it is recommended that the criterion of block adopts 10-year return period monthly average discharge (about 45.9m^3/s) with corresponding water level of 1245.50m.

Considering 75% dependability of incoming flow of 45.9m^3/s, which is 34.9m^3/s. According to practice, gate closing generally will be completed within 2 hours. Once gate of diversion tunnel is closed, when/if the gates of weir/dam are closed and reservoir will be inundated to water level of 1255.m within 1.5h. so the gates of weir/dam must be fully opened when putting the stoplogs into the gate slot. The incoming flow will be discharged through the weir/dam sluices, water level will be at 1245.3m, this will provide time and space for closing the diversion tunnel stoplogs.

(3) submergence of inlet structure

During flood season, the U/S cofferdam will be overflowed, water level will be reached to 1260.24m, the diversion tunnel will be submerged in the water, this is under the design consideration.

Issue 3: Stoplog installation

The AH has confirmed that, the stoplog has been used on the inlet structure. During the installation, PC will try their best to assist AH installation (excavator hoisting may be adopted). The gate was installed after the cofferdam was removed during the dry period, otherwise there would be no way for water to circulate after the gate closed the entrance to the diversion tunnel. According to the hydrological data and actual field measurement, in dry season the water level at the inlet of the diversion tunnel is about 1245.5m without cofferdam, which will not affect the installation operation. The More detailed installation method statement will be provided by Andriz.

OE: For Issue 2 and Issue 3, Level and dimension of platform has to be confirmed also by the supplier of the diversion tunnel intake gate. The Contractor has to guarantee that the plugging of the diversion tunnel will be finalized completely before the water level will rise above deck elevation EL.1250.50. Water ingress via the “air vent steel pipes” before finalizing the plugging of the diversion tunnel has to be avoided.

Reply: Accept.

Issue 4: The transition section

Reply: The flow section of diversion tunnel inlet is designed as invert D shaped from the entrance without transition section by considering limited room/space at the inlet area.

OE: As indicated in the document under this revision, in the gate area the concrete structure has a combined rectangular shape (bottom and side walls) with an arc shape at the ceiling, which is not a D-shape. However, the sliding gate with its sealing level has a rectangular shape. The integration of the embedded hydraulic steel parts within the concrete structure in this area has to be elaborated in detail and has to be confirmed by the supplier of the hydraulic steel structures of the diversion tunnel intake structure.

Reply: Accept.

Further comments:

1) “Wet masonry, T=1m, D=0,35m” which is indicated U/S of the concrete structure is not understood

and has to be specified. High flow velocity has to be considered in the close U/S part of the intake

structure of the diversion tunnel.

Reply: Wet masonry, T denotes thickness and D denotes the max. particle size. The purpose of the designed wet masonry in front of inlet is to protect the foundation and to prevent foundation being scoured.

2) Lean concrete shall be considered and specified.

Reply: As per contractor’s engineering practice, masonry has good performance to deal with/protect overburden foundation.

3) The respective reinforcement drawings shall be mentioned as reference drawings.

Reply: Accept.

4) The mentioned reference drawing UT1-H-300-LPC-DG-01004 is the “design memorandum of the

diversion gate” and not the drawing “Diversion Tunnel Stoplog 1st stage embedded parts”. It has to

be corrected to UT1-H-010-MEC-DG-01004.

Reply: Accept.

5) Section B-B/ Joint Bar Section B-B:

The lintel beam/ sealing level shall be indicated.

Reply: Accept.

6) Section C-C:

It has to be considered that the situation on site is not reflected in the section C-C. Most part of the

Diversion Tunnel Intake Structure is not embedded in rock.

Reply: This situation was recognized and additional encasement concrete with thickness of 1m from chainage 0+002.00 to actual rock face is designed in the revised drawing and is connected with rock mass by 4.5m long grouted rock dowel to increase/improve “the embedded effect” of the inlet section.